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THE ORIGIN AND ANTIQUITY Of our ENGLISH WEIGHTS and MEASURES. DISCOVER'D.

By their near Agreement with such
Standards that are now found in one of
the EGYPTIAN Pyramids.

Together with
The Explanation of divers Lines therein
heretofore measur'd.

By Mr. JOHN GREAVES,
ASTRONOMY PROFESSOR at Oxford.

AS ALSO,
Some Conjectures concerning the Time
when these Pyramids were built; in Answer
to certain Letters, &c.

The SECOND EDITION.

L O N D O N:
Printed for W. PAYNE, opposite Durham-Yard,
and W. BATHOE, in Church-street, both in
the Strand. MDCCXLV.



TO THE
SKILFUL READER.

THE Standards in this Pyramid so nearly agreeing with our present English Measures, and with those of the antient Persians, Greeks, and Romans, deserve the Consideration of the Learned, as being in all Likelihood introductory to the Discovery of all other Matters of greater Importance. For 'tis scarce to be doubted that the Antients who thus carefully preserved here their primitive Measures with so much Accuracy, would be less careful to leave behind them some Monuments of what other Arts their Wisdom and long Experience had found out for the Benefit of Mankind. And how probable it is that the other Pyramids not yet opened may produce something of that Nature, is not (methinks) very hard to guess. This gave me a Thought that these Papers, if published, might at one time or other become useful. But the true Origin of our English Measures, (a Thing not yet taken Notice of) and their great Antiquity here found,

To the SKILFUL READER.

by their near Agreement with these most antient Standards, was a prevailing Motive with me not to conceal these Things; which I believe were, not only for the Service, but very much for the Honour of our English Nation. Having therefore endeavour'd to give you a short Account of those primitive Rules, whereby, in old Times all Mens Rights and Properties were set forth, distinguish'd, and valu'd; and in what Measure they have been observed by our English Nation until this Day; it is now left to the Reader's Judgment, to determine what near Approaches I have made to Truth. I confess, here are some Conjectures which I will not say are infallible. And if they be erroneous, the Antiquity of our English Weights and Measures will not be thereby lessen'd; for tho' the Pyramids (according to the common Opinion) were built since the Flood, yet that these Weights and Measures are as old as Noah seems undeniably, from what I have said in Section 10, in Answer to the third Letter. Yet in these Matters I shall be willing to subscribe to their Opinion, that have more Learning and Judgment than I shall pretend to; whose favourable Acceptance of what I have done, and Pardon of such Faults as may be found herein, will be an Encouragement to, &c.

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T H E

THE
O R I G I N
 Of divers *English*
WEIGHTS and MEASURES;
 BEING
 An Answer to the first LETTER, &c

SIR,

§. 1. **T**OUCHING the great Antiquity of our *English* Nation (in old Times called *Saxons*) whom you affirm to be of the same Stock with the *Germans*, and those other Nations whose Language is a Dialect of the old *Teutonick*, nothing cou'd have given me more Satisfaction than your last on that Argument. And as to what you are farther pleased to add concerning our Ancestors, how firmly they adhered to their old Usages and Customs, and how carefully

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and exactly they have preserved their most ancient Weights and Measures ; be pleased to read what I here offer to your Consideration, which, in my Opinion, very much confirms what you say. You find in Mr. Greaves's *Pyramidographia*, an exact Description of that which he calls the first and fairest of the *Egyptian* Pyramids. You have also seen the present Lord Bishop of Peterborough's learned Tract of Scripture Weights and Measures ; wherein 'tis observed that one 4th Part of the Length of the exterior Superficies of the Tomb (supposed to be the Tomb of *Cheops* or *Cheminis*) is equal to the antient *Ammah* or *Cubit* of 6 *Palms*. Then the whole Length thereof must be equal to 24 *Palms*, which by Mr. Greaves's Measure is 7 Feet 3 Inches and a half, by the *English* Standard, consequently the Length of the antient *Palm*, according to this Standard in the *Pyramid* is $3\frac{1}{4}$ Inches, or by the decimal Way 36,458333, &c. Also the *cubick Palm* contains 48,46078378 *cubick Inches* and Parts. Now, it seems very probable, that from this *Palm* (the Breadth of a Man's Hand) all the most antient Measures are derived ; 6 of these make the antient *Ammah*, which in the Book of *Ezekiel* is said to be a *Cubit* and a Hand's Breadth, being the Length of a Man's Leg, from the Bottom of the Heel to the Top of the

Knee.

Knee. And by this Standard is 21 $\frac{7}{12}$ Inches, being shorter than the Cairo Cubit by 13 Parts in a Thousand of an Inch, which, according to Mr. Greaves reduced into Inch Measure, is 21,888; whereas 21 $\frac{7}{12}$ in Decimals is 21,875, whose Cube is 10467 $\frac{5}{12}$, or in Decimals 10467,529296875. Then Bath, the 6th Part of this, is 1744 $\frac{1807}{3072}$ cubick Inches, or in Decimals 1744,5882161458333, &c. Hin is the 6th of Bath; and contains 290,7647 cubick Inches and Parts. Our English Wine Pint, as we shall shew by and by, is the 10th Part of an Hin, or 60th Part of Bath, and contains cubick Inches and Parts 29,07647. Likewise the ancient Core, equal to our English Corn Quarter, contains 10 Eph'a's or Baths, which in cubick Inches is 17445 $\frac{113}{12}$, or in Decimals 17445,882161458333, &c.

§. 2. These Things gave me the Curiosity to examine the other Dimensions of the Tomb, and I find the Depth and Breadth of its Outside are each of them by Mr. Greaves's Measure 3 English Feet 3 Inches and 3 Quarters, or rather 39,7494 Inches and Parts, equal to 10,9027 Palms, whose Cube is 1296. Now there being 36 cubick Palms in Bath, it will follow that these 1296 cubick Palms are equal to 36 Baths, equal to the Cube of the Tomb's Breadth or Depth: This Cube, at 1000 Ounces to the Bath,

holds 36000 Ounces of Water, each Ounce about or near equal to the old *Roman* Ounce, equal to our *Avoirdupois* Ounce, equal to two *Jewish* Shekels; which 36000 Ounces are equal to our *Avoirdupois* Tun, for 36000 Ounces to the *Tun* at 16 Ounces to the Pound, comes to 112 Pounds and a half to the Hundred. And it being the Custom of our Ancestors to divide their Weights and Measures into Halfs, Quarters, 8th Parts, &c. To the End therefore that there might be no Trouble with Fractions or Parts of a Pound, the half Pound is taken from the Hundred, and added to it again in the Over-weight or Turn of the Scale, called *Draught*: For which half a Pound in the Hundred seems to have been the ancient Allowance, from which Over-weight 'tis probable, it had the Name of *Avoirdupois*. But 36000 Ounces to the *Tun*, at 18 Ounces to the Pound (which *Pound* is something near equal to 120 *Attick Drachms*) comes to 100 Pounds to the Hundred even Ballance without *Draught*. For 100 times 18 Ounces *Avoirdupois* equal to the 20th Part of this *Tun* are also equal to 112 *Avoirdupois* Pounds and a half. By which it may seem *Exod. 25, 39, 37, 24. 1 Chron. 39, 7.* that this Hundred (somewhat near equal to the *Persian Talent* mentioned by *Josephus, Antiq. lib. 3. c. 7. called Kinchares*) had its Name from the

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Number of *Mine* or Pounds of 18 Ounces
therein contained.

§. 3. Before we examine the Dimensions of the Tomb's Cavity, wherein we may find some other Standards little different from our present *English Measures*, it will be fit to describe the Figure of the Vessels or Measures of Capacity, which are Standards for those ensuing. We have found the Figure of that Solid which is the Standard for the antient *Tun* to be a *Cube*. And the Line, by which the Solidity of that *Cube* is found, is the Side of the same *Cube*, being the Breadth or Depth of the Tomb's Outside. But the Solids which are Standards of such Measures, whereof we are now to speak, are of such a Figure which may be called a regular *Polygon* of 24 Sides inscribed in an *Hemisphere*. And the Lines here found, by which we compute their Solidity, are the Axes of the several Spheres, within whose *Hemispheres* these regular *Polygons* are inscribed.

§. 4. The Figure of such Solids or Vessels, which are Standards for the ensuing Measures, may be described as follows. Let a regular *Polygon* of 24 Sides be inscribed in the great Circle of a Sphere. Let 12 other great Circles be described

upon the Sphere's Surface, representing *Meridians* or Hour Circles, dividing the first great Circle into 24 equal Parts, each of these *Meridians* passing through the *Poles* of the first great Circle, and the angular Points of two opposite Angles of its inscribed *Polygon*. Then let infinite Circles be described upon every Part of the Sphere's Surface parallel to the first great Circle, and in every of these Parallels, let a regular *Polygon* of 24 Sides be inscribed, the 24 Angles of each *Polygon* touching the 12 *Meridians* before named; by which Means there will be an infinite Number of *Polygons* in one *Hemisphere*, which will make the polygonious Figure intended. A Vessel of this Figure may be represented to the Eye as follows. The Solidity of such a Figure is equal to a *Pyramid*, whose *Base* is equal to the *Polygon* inscribed in the great *Circle* of the *Sphere*, and its Height equal to the *Axe* of the *Sphere*, being equal to $\frac{1}{3}$ of a *Prism* of the same *Base*, whose Height is equal to the *Sphere's Radius*, it will also be found, as 1 to 25881907, so the *Cube* of the *Axe* of the *Sphere* to the solid Content of this inscribed *Polygon*. In this Figure the Brim of the Vessel is in a great Circle at right Angles, with all the before-named *Meridians*; but if the Plane of its Brim had been in any other great Circle of

of the *Sphere*, the Content of the Vessel had been the same.



§. 5. We shall find that every Dimension of the Tomb's Cavity is the *Axis* of a *Sphere*, within whose *Hemisphere* such an inscribed *Polygon* is a Standard for some antient Measure of Capacity : For which Cause I conjecture that this Figure of a Vessel in old Times was well known, and seems to be the same with that of the *Laver* in which the Priests in those Days were used to wash ; which receives Confirmation by what may be gather'd from

from *Apion*, in *Josephus cont.* Ap. " *Moses* " (says he) as I have heard it spoken by the " most antient *Egyptians* was born at *Heliopolis*, who, being instructed in the Fashions of his Country, converted such Prayers " which were wont to be said in open Places, " and abroad, and caused them to be used " in private Cloysters, such as were within " the City, and ordained that in praying " they should turn themselves towards " the rising Sun, for such is the Situation of *Heliopolis*, and instead of *Obelisks* " and *Pyramids* he erected certain Pillars, " under which there were certain engraven'd Basons, on which the Shadow hap- " pening to fall (the Place wherein they " stood being discover'd and in open Air) " they observed the same Course that the " Sun does in the Firmament." To this *Josephus* agrees not, and says, he need not refute the same, by reason 'tis refell'd by the Effects. " " For (says he) when *Moses* built " that first Tabernacle in Honour of God, " he had no such Intent, nor fashion'd any " such Form, nor ordain'd any of his Successors to do the like. And after this, " when *Solomon* builded the Temple in *Jerusalem*, he never thought of any such " Curiosity as *Apion* forgeth." Why *Josephus* should say thus I can by no means see, being he acknowledges, *Antiq. lib. 3. cap.*

7. that the Door of the Tabernacle looked Eastward ; that the Altar stood before the Door of the Tabernacle. And the brazen Laver, *Exod. 30. 18.* stood betwixt the Tabernacle and the Altar. And *Antiq. lib. 8. cap. 2.* *Josephus* makes the right Side of the Temple to be Southward, and the left Side thereof Northward ; from whence it appears that the Front of the Temple was towards the East. He likewise affirms, the brazen Sea of King *Solomon* to be an *Hemisphere*, altho' in the Bible it does not appear to be such. Yet 'tis plain, that *Josephus* thought those Vessels in old Times were of that Figure. Also in the Time of the second Temple, instead of the great Sea that was made by King *Solomon*, there seems to have been divers Lavers, or Bason-like Vessels, placed before the Altar ; *Zachar. 14. 25.* And as touching the Pillars mention'd by *Apion*, we find 'tis very plain, *Exod. 24. 4.* that *Moses* built an Altar, and 12 Pillars, according to the 12 Tribes of *Israel*. Neither is there any doubt to be made that the *Israelites* in *Egypt* did worship God privately and within their Cities ; whereas *Abraham*, *Isaac*, and *Jacob*, built Altars, and worshipped in open Places abroad. Tho' it appears, that their Posterity in *Egypt* durst not do so for fear of the *Egyptians*, *Exod. 8. 25, 26.* *Shall we sacrifice the Abomination of the*

the Egyptians before their Eyes, and will they not stone us? From hence it may not only be observed, how both *Josephus* and *Apion* are of Opinion that the Lavers before the Altar were of an hemispherical or basin-like Figure, but also the 24 Angles of this *Polygon* represent the 24 Hours of the *νυχθημερον*. And 'tis probable the *Equator* *Tropicks* and other Parallels were described therein, to the end that the Priests might by the Sun's Shadow more easily discover how their *solar* and *lunar* Computations agreed with the Motions of the Luminaries. And perhaps these were the most antient Instruments that ever were used in Astronomical Observations. However, we may conclude, that this Figure of a Vessel was in old Times of very famous and noted Use, which might be one Reason why the Standards of such Measures (whereof we are now to speak) are of that Figure. Yet 'tis possible there might be also other Reasons for it, in as much as the Laver seems to be a Symbol of Innocency and Purity of Life. Thus *Pilate* washed his Hands before the Multitude, and said, *I am innocent of the Blood of this just Person*. And *Psal. 26. 6. I will wash my Hands in Innocency, &c.* Likewise, *Exod. 30. 19, 20. &c.* The Priests before they went into the Tabernacle, and before they approached the Altar, to offer burnt

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Offerings, were to wash in the brazen Laver lest they died. Then if we allow Weights and Measures to be the Symbols of just and upright dealing with Men, and the Laver to signify Purity in the Sight of God, the Standards of these antient Measures here preserved in the Figures of such Vessels may perhaps make up the Character of some excellent Person in those Days here intombed.

§. 6. Proceed we now to examine the Dimensions of the Tomb's Cavity, the Depth whereof by Mr. Greaves's Measure is 2 Feet and 86 Centesimalis of a Foot, which may be 2,86045, equal to 9,415 Palms and Parts equal to the Axis of a Sphere, within whose Hemisphere is inscribed this *Polygon*, the Content whereof is 216 cubick Palms for the Cube of the Axis is 834,32, wherefore, 1, : 25881907 :: 834, 32 : 216 the Content of this Vessel being 216 cubick Palms, equal to the *Egyptian Ardub*, equal to 6 *Baths*, equal to the *Cube* of the antient *Cubit*.

§. 7. Now 10 of these *Baths* being equal to the antient *Core*, which in the Book of *Ezekiel* is made the Rule of other Measures, (as hath been observed in Scripture Weights and Measures) then this *Core* must contain 360 cubick *Palms*, which divided by 64, the Number of Corn *Gallons* in our English

glish Corn Quarter, quotes 5,625, which in cubick Inches is 272,5919, very little different from Mr. Oughtred's Estimate of the Corn Gallon, who makes it to be 272 cubick Inches and a quarter. Here we may see by the Cubit on this Tomb, being one 4th Part of the Length of its exterior Superficies, and also by the Content of this *Polygon* how near our English Corn Quarter agrees with the antient *Core*, also with this Length of the Cubit being 21,875 Inches and Parts agrees the Side of the Cube of the antient *Tun*, which is both the Length and Breadth of the Tomb's Outside. So that here are found three different Standards all agreeing in this Length of the *Cubit*.

§. 8. The Length of the Tomb's Cavity by Mr. Greaves's Measure is 6,488 Feet and Parts, which by my Computation in Foot Measure is 6,487575, agreeing very well with Mr. Greaves, who does not give Account of these Measures to less than the thousandth Part of a Foot. This is equal to the *Axis* of a *Sphere* within whose Hemisphere is inscribed this *Polygon* of 24 Sides, the Content whereof is 70 *Baths*, equal to 2520 cubick *Palms*; for the *Axis* of this *Sphere* being 6,487575 Feet and Parts, is equal to 21,35345 Palms and Parts, whose *Cube* is 9736,53. Therefore: 1 : ,25881907 : : 9736,53 :

∴ 9736,53 : 2520, the true Content of this Vessel equal to a great Beer *Tun*, or double *Tun*, containing 12 Beer *Barrels* of 36 *Gallons* to the *Barrel*; 2520 cubick *Palms* make 122~~2~~,175 cubick *Inches*, which divided by 432, the Number of *Gallons* in 12 *Barrels*, quotes 282,688, the Number of cubick *Inches* in the Ale *Gallon*, which is commonly reckoned at 282 cubick *Inches*. Here it may be observed, that 70 *Baths* make the double *Tun*, also 35 *Baths* the single *Tun*, which is less than the *Tun* mention'd Section 2, by one *Bath*. The Reason whereof may be farther enquired into.

§. 9. The Breadth of the Tomb's Inside, according to Mr. *Greaves*, is 2,218 Feet and Parts. This we take to be 2,2188158, which is within less than one Part in a thousand of a Foot of Mr. *Greaves*'s Measure, and in *Palms* is 7,3028 equal to the *Axis* of a *Sphere*, within whose *Hemisphere* is inscribed this *Polygon* of 24 Sides, whose Content is 1008 cubick *Palms* and Parts; for the *Cube* of the *Axis* is in *Palms* 389,46; then : 1 : ,25881907 : : 389,46 : 100,8 the Content of this Vessel in cubick *Palms*, equal to half a *Tierge* of Wine, or the 12th Part of a *Tun*; for 100,8 *Palms* in cubick *Inches* are 4884,847 which divided by 21, the Number of Wine *Gallons* in half a *Tierge*, quotes 232,

6117 for the Wine Gallon, which we commonly estimate at 231 cubick Inches; whereby it should seem that our Wine Measure differs from these antient Standards more than any other *English* Measure, yet not so much as 3 Pints and a half in a Hogshead, which in so many Ages might very well happen.

§. 10. According to this Measure the Wine Pint is the 10th Part of the antient *Hin*, there being 60 Wine Pints in *Bath*. And the Wine Tun is less than the *Avoirdupois* Tun by one Part in 15 (the Reason whereof another time may be worth our Enquiry) then it will be,

As 15 to 14. So the old *Tun* to the Wine *Tun*.

As 15 to 14. So *Ardub* to the Wine *Tierce*.

As 36 to 35. { So the old *Tun* to the Beer *Tun*.

{ So *Ardub* to the Beer *Barrel*.

As 25 to 24. { So Beer *Tun* to the Wine *Tun*.

{ So Beer *Barrel* to the Wine *Tierce*.

There is in this *Pyramid* Standards of divers other Weights and Measures, as also the true antient Estimate of the Weight of Water, which will be a farther Confirmation of the Origin and Antiquity of these our *English* Measures,

SIR, Your's, &c.



The Time when the Egyptian Pyramids were built.

In Answer to the second Letter.

SIR,

§. I. IT seems reasonable to believe that you have made a very probable Conjecture concerning the Antiquity of these Pyramids. Yet as you are pleased to observe, 'tis the common received Opinion that they were built by certain *Egyptian* Kings after the Deluge, which is grounded upon the Authority of *Herodotus*, *Diodorus*, and their Followers. And upon this Account it is that Mr. *Greaves* places their Founders in the 20th *Egyptian* Dynasty, in the Time when the Judges ruled in *Israel*, because these antient Writers make *Cheops* or *Chemnis* to be the Founders of the first *Pyramid*; *Chabris* or *Cephren*, the Son or Brother to the former King, to be the Founder of the second *Pyramid*; and *Mecherinus* the Son of *Chemnis* the Founder of the third *Pyramid*. Now, says Mr. *Greaves*, if Credit may be given to *Herodotus* and *Diodorus*, we may with much Certainty place these Kings

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betwixt the Reign of *Amenophis* the last King of the 18th Dynasty, (supposed to be coetaneous with *Moses*,) and the Reign of *Vaphres* or *Hophra*, the 8th King of the 26th Dynasty, coetaneous with *Hezekiah*; for both of them describe the Founders of these Pyramids to have reigned many Ages before *Vaphres*, and long after *Sosostres* the Great, who is supposed to be the Son of *Amenophis* before-mentioned. But in the Dynasties of *Manetho* the Names of *Cheops* or *Chemnis*, *Cephren* or *Chabris* and *Mecerinus* are not found. And all the intermediate Dynasties between *Amenophis* and *Vaphres* have their peculiar Kings, except the 20th, which has the Names of no Kings assign'd it; wherefore Mr. *Greaves* conjectures, that these Kings must belong to that Dynasty.

§. 2. Yet *Diodorus* ingeniously confesses, that there is little Agreement either amongst the Natives or amongst Writers, concerning the Founders of these Pyramids. And *Pliny*, after he has recited the Names of many Authors that have described them, concludes, *Inter, omnes eos non constat a quibus facta sint.*

§. 3. And as touching the Authority of *Herodotus*, let us hear the learned *Scaliger*, *Canon Isazog. lib. 3.* Either (saith he) the Persons who gave

gave him his Intelligence were ignorant themselves, or else, like true *Egyptians*, they were cunning enough, but imposed upon *Herodotus* being a Stranger, and unacquainted with their Artifices, or else he did not understand his Interpreter, or was deceived by him ; or lastly, *Herodotus* might have so much of a *Grecian* in him, as to adulterate the true History with some Fables of his own. Wherefore he rather adheres to *Manetho* than *Herodotus*, as to the *Egyptian* History. And it appears very plain in Mr. *Greaves*'s *Pyrami-dographia*, that both *Herodotus* and divers of his Followers are guilty of many gross Errors, in their Descriptions of these Pyramids; even in such Things whereof they pretend to be Eye-witnesses, which sufficiently satisfies me, that his Authority is not to be confided in : For if I cannot trust him in such things whereof he pretends to be an Eye-witness, I have less Reason to credit him in such Matters which he pretends to no farther Knowledge of than from some obscure *Egyptian* Traditions, or uncertain Conjectures of his own. Yet there are some will have it, that *Herodotus* did not firmly believe the Stories he tells, but took them on Trust himself, and so delivered them to the World. Others impute it to his Ingenuity, that he calls his Books of History by the Names of the *Muses*, on purpose to tell his Readers, that they must not look for

meer History in him ; but a Mixture of such Relations, which, tho' not true, yet might please and entertain his Readers. However, there is nothing to be found either in *Herodotus*, or any *Greek Writer*, that can be confided in, touching the Time when these *Pyramids* were built. But,

§. 4. Mr. *Greaves* mentions certain *Arabian Traditions* about the Founders of these *Pyramids* ; and amongst others *Ibn Abd Al-hoklm* discoursing of this Argument, confesses that he could not find amongst the Learned in *Egypt* any certain Relation concerning them ; wherefore, what is more reasonable (saith he) than that the *Pyramids* were built before the Flood, for if they had been built after, there would have been some Memory of them amongst Men ; at last, he concludes, the greatest Part of Chronologers affirm, that he which built the *Pyramids* was *Saurid Ibn Salbonk*, the King of *Egypt* who was before the Flood 300 Years. The same Relation Mr. *Greaves* affirms himself to have found in several others, that *Saurid* was Founder of the three first *Pyramids*. The Author of the Book intitled, *Morat Alreman* writes of divers different Opinions concerning them ; he says also, that the *Sabeans* will have one of them to be the Sepulchre of *Sbiit*, that is *Setb* ; and the second the Sepulchre

chre of *Hermes*, and the colour'd one the Sepulchre of *Sab*, from whom they are called *Sabeans*: Wherefore your Opinion concerning the Time when these *Pyramids* were built, in some Measure agrees with these *Arabian* Traditions, which likewise say, all Sciences are to be found within them inscribed in *Hieroglyphicks*. And by what is already discover'd, it may seem that there is more still to be found, which must be left to the Enquiry of future Ages; when the other *Pyramids* come to be open'd, and some Vaults and Compartments which 'tis probable are still to be found in this. And 'tis probable there are subterraneous Passages from the first to the two next *Pyramids*, or a Passage into the Hollow of that huge *Sphinx*, whereof Mr. *Greaves* speaks, which, together with divers Reasons we have to believe that the *Pyramids* were built before the Flood, makes the *Arabian* Traditions concerning their Founders the more credible. And may it be consider'd, that

§. 5. *Manetho* in *Eusebius* affirms, That he took his History from some Pillars in the Land of *Seriad*, in which they were inscribed in the sacred Dialect by the first *Mercury Thoyth*; and after the Flood were transcribed out of the sacred Dialect into the *Greek* Tongue in *Hieroglyphick* Characters, and are

are laid up amongst the Vestries of the Egyptian Temples: By this I suppose was his Name by interpretation in Greek *Agathodæmon*, the second *Mercury* the Father of *Tat*. *Manetho* has been very hardly censur'd for pretending to take his History from these Pillars of *Thoyth*. But it seems to me very unlikely that he ever design'd to be so understood; but rather that the Books from whence he took his History bore such a Title, as *Eusebius* gives us, out of this Egyptian Writer, which might be to this Effect. Inscriptions on the Pillars in the Land of *Serriad*, in which they were written in the sacred Dialect by the first *Mercury Thoyth*, &c. for the right understanding this Title, and the Reason of it, we may do well to consider the Origin and true Nature of *Hieroglyphicks*, which I take to be as follows. It pleased God in old Times to reveal himself to the Prophets by dark and obscure Visions, conveying divers things to their Understanding by such visible Objects, as had a certain Likeness or Resemblance of the things they represented; the right Understanding whereof in those Days was thought a Piece of Wisdom, and may be supposed to be the Origin of that antient way of expressing Things by *Hieroglyphicks*. Some Foot-steps whereof may be found in the Books of the holy Scriptures, especially in the *Apocalypse*, from

form whence it appears that *Hieroglyphicks* may be expressed by Letters, Words, and Sounds, as well as by the Similitudes and Images of visible Objects. As *Nebuchadnez-zar's Vision* is as well expressed by the Words of *Daniel*, as by such an Image as the King saw in his Dream. The like may be said of the Beasts that we read of in that Book, and in the *Revelations*, which obscure way of expressing Things in the first Ages of the World, when the Earth was of one Language, was practised by the Wise and Learned; to whom it seemed good, not to expose every thing they knew to the Eyes of the Vulgar, who could not relish such Matters that were too sublime for their otherwise disposed Thoughts; but rather to teach them only such things that were the most necessary and most convenient for them to know. Much of their Knowledge at the same Time being concealed by an obscure way of Writing or Speaking, which by King *Solomon* is called the *The Wisdom of the Wise, and their dark Sayings*. An obscure Way of expressing Things was also used by the *Egyptians*, tho' perhaps very different from that of the Antients; yet some such like Way they had, as appears by the Title of their Books in *Manetho*; which are said to be translated out of the sacred Dialect into the *Greek Tongue* in *Hieroglyphick Characters*, by which 'tis imposs-

impossible to understand any other thing than such an obscure Way of Writing before-mentioned. Now all the most antient Learning amongst the *Egyptians* is attributed to the first *Mercury*, *Thoyth*, called *Trismegistus*, who was before the Flood, and is said to be the sacred Scribe to *Osiris*. The *Phœnicians* called him *Tautus*, and made him chief Counsellor to *Saturn*. *Jamblicus* says, the *Egyptians* attributed all their Books to him, because he was reputed the Father of Wit and Learning. This Learning of his they suppose was inscribed on certain Pillars, and so preserved during the Flood ; after which, and the Confusion of Languages there was a general Decay of Learning in the World, at which time there was another *Osiris*, a great King of *Egypt*, perhaps *Misrain*. There was also in those Days a second *Hermes* or *Mercury*, who was a great Restorer of Learning amongst the *Egyptians*. This Man was supposed to translate and interpret these Inscriptions on the Pillars of *Thoyth*. To him likewise they attributed many new Arts, as the interpreting of Languages, the Invention of their new Letters, and the like. Wherefore these *Egyptian* Books of *Manetho* are in the first Place attributed to *Thoyth*, as the Father of Wit and Learning, for him they made the Author of all their Books, as says *Jamblicus* ; but whereas these Books were tran-

translated out of the sacred Dialect into the Greek Tongue in Hieroglyphick Characters; the second *Mercury* (as being the first Inventor of Letters after the Flood, and Interpreter of Languages) must have the Honour of that ; wherefore the transcribing and translating of these Books (in like manner as we call warlike Affairs, Martial ; and witty Inventions, Mercurial) belongs to him. This I take to be the Exposition and Reason of the Title of those Books from whence *Manetho* took his History. Whereby it appears, that according to the Tradition of the old *Egyptians*, the Pillars of their first *Hermes* or *Mercury* were built before the Flood. And as touching the Testimony of *Manetho*, we may consider,

§. 6. That the *Egyptians* were a very antient and learned People, which is undoubt-
edly true from the Testimony of holy Scrip-
ture, where, in the Book of *Isaiah*, the
Counsellors of *Pharoah* are called, *wise
Counsellors*, and he is called, *the Son of the
Wise*, and *the Son of antient Kings*. And we
find it the Commendation of such a Man as
Moses, to be *skill'd in the Learning of the
Egyptians*, which in the Days of King *Solomon*
was made the Standard of all human Wis-
dom, as appears by the Comparison that is
made betwixt their Wisdom and his, and
what

what Time the Learning of the *Greeks*, tho' about the Days of *Homer*, was not worth taking notice of. But the *Egyptians* are said, by *Strabo*, to have conceal'd their Learning under many Symbols, and were not easily drawn to unfold it : Neither does it appear that the most mysterious Parts thereof were ever known to Foreigners. And 'tis probable after such time as they were conquer'd first by the *Persians*, and after that by the *Greeks*, their Nobility (which were also their Priests, in whose Books and Breasts their antient Learning was locked up) being much decay'd, if not almost ruin'd, I say, 'tis very probable after these great Alterations, that the latter *Egyptians* scarce understood their antient Learning, for which cause they have been esteem'd fabulous in whatever they wrote. Insomuch, that *Josephus* saith, if that which they report were true, it were impossible that they should so much differ ; but they labour in the Invention of Lies, and write neither agreeable to themselves nor to each other. And *Manetho* is thought by some to deserve this from *Josephus* as much as any of them. And the Truth is, his first Dynasties of *Egyptian* Kings have but little Truth in them, unless we suppose many of them to be coexistent, and also at the same Time that there was one *Pharoah* or King over all *Egypt*. If this be so,

so, then he reckons several Dynasties of their Princes which also were Priests instead of Kings ; which 'tis likely was more than he designed. But if *Manetho* did so little understand his Books, yet we have at least this Advantage by it, that what he writes concerning the Title of these Books, he sets down as he finds it, not pretending to explain the Meaning thereof, which makes him in this Case the more authentick ; and concerning the antient *Theyth* it may be observed; that,

§. 7. The Memory of *Adam* (as some conjecture) was preserved among the Greeks by the Name of Κέρως or *Saturn*; and amongst the *Egyptians* by the Name of *Osiris*, whose sacred Scribe was *Theyth*, say the *Egyptians*: But the *Phænicians* will have him Counsellor to *Saturn*, by either of which Names may be understood *Adam*. And the Name of *Seth* (as a late learned Man, (*Stillingfleet in Origines Sacrae*) has observed) was of common Use amongst the *Egyptians*, as appears by *Plutarch de Iside & Osiride*. And in this very Place in *Manetho* where it follows οὐεῖθω Σεθ.ως, a Book bearing the Title, which according to *Vettius Valens Antiochenus* is not Σεθ.ως but Σεθ, and the Name of the Place, where stand the Pillars of *Seth*, is taken out of *Josephus*, by *Eustathius in Hex-*

ameron, and called Σεριάδο, the very same with this in *Manetho* where stand the Pillars of *Thoyth*. Here then we find the Authority of *Manetho* confirmed by *Josephus*, and that the *Egyptian Thoyth*, to whom they attributed all their Books, was *Seth*.

§. 8. We have already observed out of Mr. *Greaves*, that *Ibd Abd Albokm* an Arabian Writer says, 'tis the Opinion of the greatest Part of Chronologers that the *Pyramids* were built before the Flood by King *Saurid*, which he confirms out of *Egyptian Books*. And according to *Arabian Traditions*, one of the *Pyramids* is the Sepulchre of *Seth*. Now 'tis very probable, that the old *Egyptians* might call the Place where these *Pyramids* stood by the Name of their Founder, with which *Seriad*, the Name of the Place, where stood the Pillars of *Thoyth* or *Seth*, has some Affinity. And it seems probable that the *Pyramids* are the Pillars of *Seth*; not only from these *Arabian Traditions* that one of them is *Seth's Sepulchre*, and the new Agreement of *Terra Seriadica* with the Land of *Saurid*, which 'tis likely in old Times was the Name of this *Lybian Sarra*, or *Desart*, wherein these *Pyramids* stand; but for that there neither is, nor can it be found that there ever was, any other Monument in the World, made by the Art of Man able

to endure such a Deluge. So that either these are the very Pillars of *Thoyth* or *Seth*, or else there never was any such in Being since the Flood. Contrary to these antient both *Egyptian* and *Jewish* Traditions, which are of too great Antiquity to be wholly neglected without sufficient Reason. And if we view the Massiness of these Structures, one of them covering near eleven Acres of Ground, and near a Furlong in Height; the Greatness of the Stones, some of them 30 Feet in Length; the Richness of the Materials, well polished Marble hewn out of the Mountains of *Arabia*, the Closeness of the Joints, and exquisite Truth of the Work, being as firm as the Rock upon which they stand, (speaking of this Eastern *Pyramid*) Mr. *Greaves* says, The Structure of it has been the Labour of an exquisite Hand, as appears by the Smoothness and Evenness of the Work, and close Knitting of the Joints: A Property long since observed by *Diodorus* to have run through the whole Body of this *Pyramid*. And speaking of a certain Gallery therein, saith, This Gallery or Corridore (or whatever else I may call it) is built of white and polished Marble, which is very evenly cut in spacious Squares, or Tables; of such Materials as is the Pavement, such is the Roof, and such are the side Walls that flank it; the Coagmentation

or Knitting of the Joints is so close, that they are scarce discernable by a curious Eye. I say these Things consider'd, we can take them for no other than the Works of those long-liv'd Men before the Flood, that could undertake such great Things with Hopes to see them finish'd. And some Reason may be given why these Men should raise such expensive Structures, for having by Divine Revelation a Fore-knowledge of the Deluge, and finding the Vice and Wickedness of Youth to encrease more and more, left off the Care of their hopeless Offspring whom God would destroy, and endeavour'd to do something for those whom he would be graciously pleased to preserve, and to perpetuate the Memory of their first Parents and Benefactors, by raising for them such Monuments that might withstand the Force of the Waters, and be supported against all the Injuries of Time ; hoping also by this Means to preserve so long as the World endures those Sciences, which their long Experience had found out for the Good of Mankind.

§. 9. But after the Flood and Confusion of Languages, when Mens Lives were shorten'd, and Death grew more common, when it was no Rarity for a Man to die as it had been during the first 1000 Years of the World, and all Fears of a future Deluge were

were over ; why Men should build such huge expensive Monuments for a few dead Men, to impoverish themselves, and endanger the Ruin of their Posterity, I can by no means see. King *Solomon* reigned over many Countries, was endued with Wisdom from above, and erected many magnificent Structures ; but all the Buildings of King *Solomon* put together, would not equal the Expence of one of these. *Diodorus* says, That the Greatness of the Work, and the Art of the Workmen struck an Admiration in the Beholders. *Herodotus* saith, That altho' there was a Temple at *Ephesus* very renown'd and another at *Samos*, yet the *Pyramids* are more worthy of Relation ; each of which single might be compared with many of the most sumptuous Buildings of the *Grecians*. Then surely, a vast deal of Treasure would be consumed in building so many, there being about twenty now standing. If the old *Egyptians* had ever been fond of such Works, they never had a better Opportunity for them, than when the *Israelites* were their Slave's. But we hear nothing of this Matter in those Days ; finding them hard at Work about Things more profitable and less expensive. They made Bricks to build Treasure Cities for *Pharoah*. Here is no Mention of hewing great Beams or Tables of Marble out of the *Arabian Mountains* ; nor of employing Myriads of Men

to fetch these great Stones from so remote a Place; which would certainly have been spoken of, if such a great Task had been enjoy'd them. But, instead of that, their Work lies at Home, except when they were scatter'd over the Land of *Egypt* to gather Stubble instead of Straw. Yet *Josephus* thinks the *Israelites* were employ'd in these Works; and any Man would think the same, that believe these *Pyramids* were founded by *Egyptians*: For if that were so, I can see no Reason why some of these mighty Structures were not erected whilst the *Israelites* were in *Egypt*, seeing those who follow *Herodotus*, *Diodorus*, &c. acknowledge that both before and after that Time, there were *Pyramids* built. And if we consider the Standards of our *English* Measures here found, which you have seen, and the Standards of such antient *Perians*, *Grecian*, and *Roman* Measures, which you shall see if you please, you will find it very hard to conjecture that they were all in Use amongst the *Egyptians*. And the best Reason that can be given, why they were expressed with so much Obscurity, that in all Likelyhood they might forever remain unintelligible, is, that the Contrivers of these antient Monuments had a Fore-knowledge by Divine Revelation, that in the latter Days they should be understood: Also the Figure of

the

the Laver here preserved (in my Opinion) shews the Religion of their Contrivers, as plain as the Pattern of the Altar set up beyond *Jordan* shewed the Religion of the two Tribes and a half; which makes it appear that the Founders of these *Pyramids* were Worshippers of the true God, which 'tis certain the *Egyptians* were not; for their Religion was so contrary to that of the *Jews*, that they first worshipped those Beasts which they last sacrificed to God; insomuch, that the *Jewish* Sacrifices were an Abomination to the *Egyptians*. So that the *Egyptian* Priests were never employ'd in such Sort of Services in their religious Worship as the *Jews* were, neither were these Lavers or Basins (mentioned by *Apion*) in Use amongst the *Egyptians*; but are spoke of by him, as Things to which they were unaccustomed.

§. 10. I know, Sir, you will ask, how it comes to pass (if these *Pyramids* be the Pillars of *Seth*) that we find no Inscriptions upon them. To which I must say, that what is in these *Pyramids*, yet undiscover'd, I know not; but this I believe, that what Learning is here to be found, was also written upon Tables, or in Books, whose Title was *Inscriptions on the Pillars of Seth*. And that these were in the Time of the Deluge pre-

preserved by *Noah*, and by him transmitted to Posterity ; from which Tables or Books, and not from the Pillars, the Post-diluvian World had their original Learning. Thus I have given you some Reasons, why your Opinion may seem most probable concerning the Time when those *Pyramids* were built ; which do in some Measure confirm what you say.

SIR, Yours, &c.



Divers



Divers antient Weights and Measures whose Origin is from the Weight of Water, and from the Weight of Wheat.

ALSO

The Origin of our English Land-Measure, and Foot-Measure.

In Answer to the third Letter, &c.

SIR,

§. I. **W**HAT you confirm concerning the Stature of Men, before the Flood, seems to be very true for the Reasons you have given. And the Length of the Cavity of this Tomb, which is 6 Feet 5 Inches, and about 85 Centeims of an Inch, confirms me in the Opinion, that

that the Stature of Men now is the same as at the Beginning of the World. And as touching the Invention of Weights we find that when Men began to multiply upon the Face of the Earth, and divers Arts were found out, they had also the Invention of Metals long before the Flood, which we may suppose introduced the Use of Weights, without which the Value of Metals could not be known. And that the Standards for other Measures might also be Standards for these, they take a Sort of Water, whose Weight was known to be constant and certain, and this is supposed to be Rain Water probably, at some certain Time of the Year in the oriental Countries, where it falls only at certain Seasons; and with this Water they fill the Measure called *Bath*, whose Weight is made the fixed Standard for Matters of Gravity which we call Weights. This great Weight is decimaly divided, the 1000th part whereof is an Ounce, whose half is equal to the Jewish Shekel. This Ounce, as appears in Scripture Weights and Measures, is about equal to our *Avoirdupois* Ounce, from whence proceed the most antient small Weights; yet you are very much in the right, where you affirm that the lightest Sort of Rain-Water is heavier than 1000 Ounces to the *Bath*; for if such a Measure be truly and exactly fill'd to the Brim it weighs

weighs more than 1000 Ounces. But 'tis not usual to fill a Measure so full, neither can it conveniently be done in ordinary Use without spilling; so that when this Standard was instituted, the Measure was filled somewhat within the Brim, that is to say, 10 Ounces more would exactly fill it; which is demonstrable by an antient Standard in this *Pyramid*, whereby it appears, that the true antient Estimate of the Weight of Water was 1010 Cunces to the *Bath*, when that Measure is exactly filled.

. §. 2. After such time as Weights became much in Use, there were divers new invented Measures both of Gravity and Capacity, which proceeded from the Ounce, as 12 of these Ounces made a Pound, from whence they computed by 10 s. 100 s. and 1000 s. of Pounds Weight. Also the Measure that held 10 Pounds of Water was by the *Romans* called *Congius*, the 6th part whereof was a *Sextary*, 8 *Congii* made *Amphoræ*, 20 *Amphoræ* made *Culeus*: These were antient, and after the Rate of 10 Pounds to the *Congius*; their proportionable Weight in Water filled them exactly to the Brim, as appears by the Height of the Room wherein this Tomb stands, which I find to be a Standard for these Measures, and according to Mr. *Greaves* is 19 Feet and a Half; which 19 Feet and a Half, or

or rather 19,500033 is the Axe of a Sphere within whose Hemisphere is inscribed the before named *Polygon* of 24 Sides, whose Content is 68435,64 cubick Palms; for 19 Feet and a Half in Palms is 64,184 whose Cube is 264415, then: 1 : ,25881907 ∴ 264415 : 68435,64 the Content of the *Polygon* equal to 100 *Roman Culæi*, equal to 16000 *Congii*; for the Content of this *Polygon*, which is 68435,64 cubick Palms and Parts turned into cubick Inches, is 3316444,75; this divided by 16000 the Number of *Congii* in 100 *Culæi*, quotes 207,2778, much about equal to the Standard *Congius* of *Vespasian* now at *Rome*. And this 207,2778 cubick Inches and Parts exactly hold 10 Pounds of Water, after the Rate of 1010 Ounces to the *Bath*, which both shews the Antiquity of the *Roman Measures*, and that this was the Weight of that Water which was the Standard for all Measures of Gravity. This also very well agrees with what we find in Scripture Weights and Measures taken out of Sir *Jonas Moor*, founded in Experiments made by Dr. *Wyberd* and others, concerning the Weight of pure Rain or running Water, who suppose 1000 Ounces of such Water will fill 1725,56 cubick Inches. But according to Doctor *Wyberd* (as Sir *Jonas Moor* affirms) 14 Pounds *Avoirdupois* are equal to 17 Pounds *Troy*, at which Rate the *Avoirdupois*

dupois Ounce is 437,1428 Grains and Parts Troy. Whereas according to the Experiment made by *Thomas Everard, Esq;* and others in *February 1696*, in the Presence of divers Members of the *House of Commons*, when a Bill was depending in Parliament for laying a Duty upon Malt, as appears in his Book intitled *Stereometry, &c.* the 4th Edition printed in the Year 1703, the Standard Bushel of *Henry the 7th* in the *Exchequer* filled with common Spring-Water, and the said Water measured by a regular *Parallelepipedon* (whose Base was 4 Inches Square, and Depth 14 Inches) was found to contain 2145,6 solid Inches. The said Water was also weighed by the Standard Weights in the *Exchequer* (by a Beam which would turn with 6 Grains with 30 Pounds in each Scale) and found to be 1131 Ounces and 14 Penny-weights *Troy*: At the same Time also, the Standard *Troy* Weights were compared with the Standard *Avoirdupois* Weights, and it was found that 15 Pounds *Avoirdupois* was equal to 18 Pounds 2 Ounces and 15 Penny-weight *Troy*; at which Rate the *Avoirdupois* Ounce is equal to 437,5 Grains and Parts *Troy*. Then according to Dr. *Wyberd*, if 1000 Ounces of Water at 437,1428 Grains and Parts to the Ounce will fill 1725,56 cubick Inches and Parts, then the same Number of Ounces at 437 Grains and a Half to

The Ounce will fill 1727 cubick Inches, which is much about 1010 Ounces to the Bath, for at that Rate 1000 Ounces fills cubick Inches 1727,315. Also by Mr. Everard's Experiment 1000 *Avoirdupois* Ounces fill 1728 cubick Inches, from whence it may seem that our *Avoirdupois* Ounce of 437 Grains and a Half is nearer the Weight of the old Ounce equal to 2 *Jewish* Shekles than the *Roman* Ounce, which according to Mr. Greaves is 438 Grains *Troy*. By reason that the Water from whose Weight the most antient Weights are derived, is supposed to be Rain-Water, as is observed in *Scripture* Weights and Measures, which ('tis very likely) could not be heavier than the common Spring-Water, in Mr. Everard's Experiment. Proceed we now to

§. 3. The Weight of Wheat which you take to be so various, that 'tis hard to conjecture the Antients ever derived their Measures from such an uncertain Standard ; yet we may consider that the Custom of weighing such Grain is founded upon very good Reason, inasmuch as the Goodness of Wheat well gathered, not damaged by Rain or other Casualty, clean from Seeds or other Mixture, is better discover'd that Way than by the Eye or Hand. Likewise the true Quantity of a Heap of Wheat is best known by

by its Weight, for according to the usual Way of measuring Wheat, a Quantity thereof can scarce be measured twice exactly alike ; for (without great Care) it will sometimes lie lighter, and sometimes fall closer into the Measure, insomuch that (as I am told) there is about the 10th Part Difference betwixt a Measure of Wheat shaked down together, and the same Measure of Wheat if lightly poured in ; for which Cause 'tis common in divers Parts of *England* to keep Measures somewhat bigger than the Statute, that they may be sure to hold out with the Standard. And for the same Reason some will have larger Measures still, that they may be sure to hold out with their Neighbours, which I suppose is true enough. And this amongst other Things occasions much Inequality in Corn Measures, which might be prevented, if it was usual to sell Grain by Weight, as it seems the Antients did ; and also made the Weight of some good Sort of Wheat (when so long inned as to be fit for Use) the Standard whereby to judge of the Goodness of all other Wheat ; by which means the Price thereof was the better proportioned to its Goodness. And the antient Estimate of the Weight of this Wheat appears to be after the Rate of 5 *Core* or *Quarter* to the *Avoirdupois Tun*, with the Allowance of 15 in the Thousand over and

above for Waste in grinding. So that as 10100 to 7308, so is the antient Estimate of the Weight of a Measure fill'd up to the Brim with Water, to the Weight of the same Measure fill'd up to the Brim with Wheat. But a Measure fill'd with Water is allowed to want 10 Parts in a 1000 of the Brim. Likewise being fill'd with Wheat there is an Allowance of 15 in the 1000 for Waste in grinding, wherefore as 100 to 72, so the Weight of a Measure of Water (as 'tis usually filled with Liquids) to the antient Estimate of the Weight of the same Measure of Wheat, excluding that Allowance, at which Rate 5 *Cores* or *Quarter* of Wheat ground will be equal in Weight to one *Avoirdupois Tun*. Also 5 *Cores* or *Quarter* of Wheat together with the said Allowance is equal to 36540 *Avoirdupois Ounces*, equal to one *Avoirdupois Tun*, and 15 in the 1000 over. This Tun, being equal to 20 Hundred of 112 *Avoirdupois Pounds* to the Hundred, and 8 Ounces in the Hundred allowed for Draught, (which Hundred is also equal to 100 Pound weight at 18 Ounces to the Pound upon an even Ballance without Draught) this 36540 Ounces we shall also find equal to 20 old *Persian Talents*, each Talent equal to 100 *Minæ* at 120 *Attick Drams* to the *Minæ*. Now such a fixed Standard as this is sure and certain, and its Constancy

stancy undoubted, from which it will appear are derived divers very antient Weights and Measures.

§. 4. For the Length of the Room wherein this Tomb stands by Mr. Greaves's Measure is 34,38 Feet and Parts, its Breadth half so much ; this 34,38 or rather 34,3817 is the Axe, and its half the Radius of a Sphere within whose Hemisphere is inscribed this *Polygon* of 24 Sides, whose whole solid Content is 375095,7623 cubick Palms and Parts, for 34,3817 Feet and Parts turned into Palms make 113,165, whose Cube is 1449258,597, wherefore as 1 to ,25881907 so 1449258,597 to 375095,7623 the Content of this *Polygon* in cubick Palms. This Vessel holds as much Water as is equal to the Gross Weight of 144 great *Cores* of Wheat, 10 Quarter to the *Core* being also equal to twice 144 *Avoirdupois* Tuns, and 15 in the 1000 over ; for at the Rate of 1010 Ounces to the *Bath* 375095,7623 cubick Palms and and Parts, will hold 10523520 Ounces of Water, which divided by 144 quotes 73080, being the Double of 36540, and consequently equal to 2 *Avoirdupois* Tuns, and 15 in the 1000 over, which is the old Estimate of the gross Weight of 10 *Cores* of Wheat, at which Rate the Bushel of Wheat upon an equal Ballance weighs 57

Avoirdupois Pounds one Ounce and a Half, much about our Estimate thereof at this Day, for the simple Weight of a Bushel of Wheat ground, where Allowance was made for Waste in grinding, and no Toll of the Mill, is commonly estimated at half an *Avoirdupois* Hundred. From this Standard of the Weight of Wheat are derived divers antient Weights and Measures ; for the *Attick* Dram by Mr. *Greaves*'s Estimate is 67 Grains *Troy*, and according to the learned Bishop *Cumberland*'s Estimate in *Scripture Weights and Measures*, 'tis 66 Grains. If we fix it betwixt these two Estimates at 66,609375 Grains and Parts, then this *Minæ* or Pound will be 18,27 Ounces and Parts *Avoirdupois*, equal to 120 *Attick* Drams, consequently 100 *Minæ* equal to the old *Persian* Talent mentioned 1 *Chron.* 29. 7. and by *Josephus Antiq.* l. 3. cap. 7. called *Kinchares*, is also equal to our *Avoirdupois* Hundred, and 15 in the 1000 over; 24 of these Talents make the gross Weight of Corn Tun which we call *Wey*, equal to 6 *Cores* of Wheat. Now the Weight of this *Minæ* in Water fills the *Attick* Sextary to the Brim, 6 Sextaries make χ^{v} , 12 *Choes* make *Metretes*, 6 *Choes* are the *Persian* Bath mentioned 2 *Chron.* 4. 5. 3000 whereof were about equal to 2000 antient *Baths* mentioned 1 *Kin.* 7. 26. We also find 2 *Chron.* 2.

10. χ^{sc}s is called *Bath*, where the 20 *Cores* of Oil mentioned 1 *Kin.* 5. 11. are made equal to 20000 *Baths*; here if we make *Bath* to be χ^{sc}s, and these *Cores* great *Cores* of 10 Quarters to the *Core*, 20 of them will be somewhat near equal to 20000 *Baths*, we suppose absolute Exactness was not intended. And if it be admitted that the Weights and Measures mentioned in the Books of *Chronicles* are *Persian*, which it seems to me cannot be avoided, then we may find what the 300 Pieces are, 2 *Chron.* 9. 16. which we translate *Shekles*, and are equal to 3 *Maneh*, 1 *Kin.* 10. 17, for the *Maneh* was 30 Ounces, as is made plain in Scripture Weights and Measures, which is somewhat near equal to 100 double *Attick* or *Persian* *Drams* mentioned in the Books of *Ezra* and *Nehemiah*; consequently 300 double *Atticks* are near equal to 3 *Maneh*. It may seem that these *Persian* Weights and Measures were antiently used in Traffick and Commerce amongst the Eastern Nations, and it seems were known to the *Jews* long before the *Babylonish* Captivity, as appears by the *Talent* mentioned by *Josephus*, *Antiq. lib.* 3. c. 7. and the *Shekles* mentioned 2 *Sam.* 14. 26. seem to be more than single *Atticks*, such as those mentioned 1 *Chron.* 29. 7.

§. 5. 'Tis very probable, there ought to be the same Proportion betwixt the *Avoirdupois* and *Troy Ounce*, as betwixt the *Attick* and *Roman Sextaries*; for the Weight of the Ounce *Avoirdupois* seems to have been estimated at 600 Grains of Wheat, it being much about the Weight of so many dry and full Grains: And also agrees very well with our *English* Estimate thereof, which by the 31 *Edw. I.* is 32 Grains of Wheat to a Sterling Penny. If the *Avoirdupois* Ounce weighs 600 Grains of Wheat, then the Weight of *Core* filled with Water to the Brim will weigh 6060000 Grains, the Content of which *Core* is $17445\frac{13}{16}$ cubick Inches, equal to 360 cubick Palms. But a Cylinder being thought the most convenient Figure for dry Measures, and it being their ordinary Way in old Times to gauge these Measures by the cubick Palm or cubick Digit, a Digit in Length being the 4th Part of a Palm or Hand's-breath, and it being also found that there could be no convenient Dimensions of a Cylinder for these antient Measures, except these following, without computing to some minute Part of the Palm or Digit, it was therefore so order'd (as we have good Reason to think,) that

The Diameter of a Cylinder, whose Content is a Great Core, which we call a Last, should be 76 Digits, and the Depth of the Cylinder 50 Digits.

The Diameter of a Cylinder, whose Content is a Core, should be 38 Digits, and its Depth 20 Digits.

The Diameter of a Cylinder, whose Content is an Ephah, should be 19 Digits, and its Depth 8 Digits.

The Diameter of a Cylinder, whose Content is an Homer, should be 7,6 Digits, and its Depth 5 Digits.

These Measures above are successively in a decuple Proportion to each other. But these following successively exceed each other in octuple Proportion, which was also of antient Use, as will be seen when we come to speak of Land-Measures.

Also, that the Diameter of a Cylinder, whose Content is a Gallon, should be 9 Digits and a half, and the Depth of the Cylinder 5 Digits.

The Diameter of a Cylinder, whose Content is a Bushel, should be 19 Digits, and in Depth 10 Digits.

The Diameter of a Cylinder, whose Content is a Core, should be 38 Digits, and in Depth 20 Digits.

Now

Now according to these Dimensions (the Proportion of the Square of the Diameter to the Area of the Circle being taken as 452 to 355) the Content of the Bushel is 2146⁷; or, by the Decimal Way, 2146,875 cubick Inches, which is very near the Standard Bushel of *Henry the 7th*, in the *Exchequer*, according to Mr. *Everard's* Experiment, who found it to be 2145,6 cubick Inches. But in Inch Measure a Cylinder of 18,5 Inches Diameter and 8 Inches deep makes somewhat near the Measure of this Bushel, its Content being 2150,42 cubick Inches, this exceeds the Standard Bushel of *Henry the 7th*, according to Mr. *Everard* almost 5 cubick Inches. Yet it being consider'd, that in the ordinary Way of measuring Corn, such Exactness as this is rarely observed, and there being no other convenient Dimensions (without counting to the hundredth Part of an Inch) that would come so near as these. It was enacted in the *Act For laying Duty upon Malt*, That every round Bushel with a plain and even Bottom, being 18,5 Diameter throughout, and 8 Inches deep, shall be esteemed a legal *Winchester* Bushel, according to the Standard in His Majesty's *Exchequer*. Now I take it that these last mentioned Measures were in old Times proportioned to the ancient Estimate of the single Weight of Wheat, with-

without Allowance for Waste in grinding, which is at the Rate of 900 Ounces, or half an *Avoirdupois* Hundred to the Bushel; and that this Allowance was made afterwards by adding as Over-measure a Pint to each Bushel, or a Gallon to each Quarter. For we find that our Corn Gallon has commonly been estimated at $272\frac{1}{4}$ cubick Inches; and Bushels have ordinarily been made proportionably as great, and greater than that comes to, where no such Allowance is to be claimed in Over-measure; at which Rate the Bushel amounts to 2178 cubick Inches, which is about a Pint greater than this Standard of *Henry the 7th*. But the true Corn Gallon, according to the Standards in this *Pyramid*, (less than which we seldom use) is 272,5919 at which Rate the Bushel will be 2180,73527 cubick Inches; if out of this I subtract the Allowance for Waste, there remains 2148 Inches and a Half, the simple Content of the Corn Bushel; for to this 2148,5 add 15 in the 1000, the Sum is 2180,73, &c. as before. But a Cylinder of 19 Digits Diameter, and 10 Digits deep, contains cubick Inches 2146,875. Let this be reputed a Bushel, and the Pint will be 33,545, which added to 2146,875 makes 2180,42 for the full Bushel with Allowance for Waste, which agrees likewise with these antient Standards in the *Pyramid*; wherefore, although this Cy-

Cylinder of 19 Digits Diameter and 10 Digits deep want 1 cubick Inch and a Half of the true simple Measure of a Bushel, yet a Pint being allowed to each Bushel in Over-measure, makes up that Deficiency, by giving to the simple Measure of a Bushel so much over and above 15 in the 1000, the usual Allowance for Waste, as that comes to. Then to re-assume what I spoke of before, if the *Avoirdupois* Ounce weighs 600 Grains of Wheat, then 10100 such Ounces (the Weight of *Core* filled with Water up to the Brim) will weigh 6060000 such Grains; but by the former Proportion of the Weight of Water to that of Wheat, a *Core* of Wheat fill'd exactly to the Brim weighs 7308 *Avoirdupois* Ounces, each Ounce equal in Weight to 600 of these Grains of Wheat, consequently 7308 Ounces (the Weight of a *Core* of Wheat) weighs 4384800 such Grains, from whence it likewise follows that 4384800 such Grains of Wheat will fill the Measure of *Core*, equal to 360 cubick Palms, equal to $17445\frac{3}{5}\frac{5}{6}$ cubic Inches. But if I take the simple Measure of this *Core* without Allowance for Waste, which after the Rate of 2148,5 to the Bushel contains 17188 cubic Inches, and fill it with such Grains of Wheat, it will hold 4320000. Then the simple Measure of *Epba*, equal to 1718,8 cubic Inches is 432000 such Grains; also the simple

ple Measure of the 432d Part, *Ephæ* (which the *Rabbins* say is equal to a Hen's Egg) equal to 3,9787 cubic Inches and Parts will hold 1000 such Grains; and being fill'd with Water 10 Parts in 1010, within the Brim, (as it was usual to fill a Measure with Liquids) weighs 997,76 Grains *Troy*, which 'tis probable should be 1000, for then there would be the same Proportion betwixt the Ounce *Troy* and *Avoirdupois*, as betwixt the *Roman* and *Attick* Sextaries, which is as 480 to 438,48. Likewise it would be as the antient Estimate of the Weight of Water to that of Wheat; so the Grain *Troy* to the Weight of a Grain of Wheat, after the Rate of 600 to the *Avoirdupois* Ounce. I will only add, that by the Number and Weight of these 1000 Grains of Wheat, that fill'd this little Measure, is known both for Weight and Fulness of the Grain what that Wheat is, which the Antients made the Standard whereby to judge of the Goodness of all other Wheat.

§. 6. As touching the most antient Land-Measures, they proceed from the *Cubit* of 6 *Palms*; yet there are Measures of less Antiquity derived from the *Cubit* of 5 *Palms*, as the *Grecian* Foot, Pace, and Furlong, which we have no Occasion to speak of here. The most antient Way of measuring Land

was by the *Cubit*, computing decimally by Unites, 10 s. 100 s. 1000 s. &c. of *Cubits* as follows.

10 Cubits in Length make one Decade equal to 10 Cubits in Length.

10 Decades in Length make one Time the Side of the *Egyptian Aroura* equal to 100 Cubits in Length.

10 Chiliads in Length make one Myriad equal to 10000 Cubits in Length.

The Side of a Square whose *Area* is equal to 10 square *Cubits*, is in *English Inch Measure* 69,1748224, or in *Foot Measure* 5,764568, &c. This we may call a *Pace*.

10 Square Cubits make one *Square Pace* equal to 10 Square Cubits, or to 1 Square *Pace*.

10 Square Paces make one *Square Decade* equal to 100 Square Cubits, or to 10 Square *Paces*.

10 Square Decades make one *Square Roman Clime* equal to 1000 Square Cubits, or to 100 Square *Paces*.

10 Square *Roman Climes* make one *square Egyptian Aroura* equal to 10000 square *Cubits*, or to 1000 Square *Paces*.

10 Square Egyptian Aroura make one Square short Stade equal to 100000 square Cubits, or to 10000 square Paces.

10 Square short Stades make one square Chiliad equal to 1000000 square Cubits, or to 100000 square Paces.

10 Square Chiliads make one square Mile equal to 10000000 square Cubits, or to 1000000 square Paces.

10 Square Miles make one square Myriad equal to 100000000 square Cubits, or to 10000000 square Paces.

Also, 10 Paces in Length make the Side of Clima equal to 10 Paces in Length.

10 Times the Side of Clima in Length make 1 short Stade equal to 100 Paces in Length.

10 Short Stades in Length make 1 Mile equal to 1000 Paces in Length.

Twelve times the Side of *Clima* makes the great *Stade* equal to 120 Paces in Length; also 12 *Chiliads* make *Parasang* equal to 12000 *Cubits* in Length; from these are derived all the most antient Land-Measures.

§. 7. But in surveying great Quantities of Land larger Measures (which we may call gross Measures) were also used, by rea-

son Allowance was made for Waste ; that is to say, for Meers and free Bounds (as our Countrymen word it) Fences and Roads. The Allowance for Meers is 4 in the 1000, which was given to all Lands, that their Bounds might be marked with Stones or other Land Marks ; and a Wadd (as they term it) or Meer driven from one Land Mark to another without touching or trespassing upon the Lands on each Side. This also where Lands were inclosed with a Wall or such like Fence, was left out for the Wall or Fence to drop upon. Likewise where Lands were inclosed by a Ditch, the Meer was also left out, to the End the Ditch might be sufficiently scoured and repaired, without digging or encroaching upon the next Neighbour. The Allowance for free Board was 10 in the 1000 ; and this when a Lordship was inclosed is left out, to the End that a Wagon, Cart, or the like, might be driven upon Occasion on the Outside thereof, without trespassing upon the next Lordship. Besides all this, there was also 10 in the 1000 allowed for Fences, and to all Lands above a square *Chiliad* 24,576 in the 1000 was allowed for Roads and High-ways, so that the whole Allowance for Waste is 24 in the 1000 to all Lands under a square *Chiliad*, for Meers, Fences and free Boards, and 48,576 in the 1000 to all Lands from

a square *Chiliad* upwards, for the same Uses, and also for Roads and High-ways. The Proof of these Allowances for Waste appears by their Agreement with divers known antient Measures, and also by the Use of divers antient Rods, Perches, and other Measures in surveying of Lands.

§. 8. And these are chiefly the *Pace*, the half *Cubit*, the *Rod* or *Reed* of 6 *Cubits*, the *Rod* of 8 *Cubits*. The *English* Foot Measure, and Inch Measure. The *Perch*, and the *Chain* of 4 *Perches*. The *Pace* in Inches is 69,1748224. A *Chain* equal to 10 of these *Paces*, equal to the Side of the *Roman* *Clima*, being divided into 100 *Links*, is a very good *Chain* to measure a Piece of Ground, so as to give the *Area* thereof in square *Cubits* simple Measure. One square *Pace* being equal to 10 square *Cubits*. And the Square of this *Chain* (equal to the simple Measure of a *Roman* *Clima*) containing 1000 such *Cubits*, it follows that a Decimal Computation is hereby readily made agreeable to the *Area*'s of such antient Land Measures, which successively exceed each other from the least to the greatest in decuple Proportion. But where full Allowance is made for Waste, a *Chain* of 32 *Cubits* is much more suitable, divided into 8 *Perches*, and each *Perch* into 8 *Links*, each *Link* equal to $\frac{1}{2}$ a *Cubit*; for the Square of this *Chain* equal to

1024 square Cubits exceeds the square of the *Chain* of 10 Paces by 24 in the 1000, which is the full Allowance for Waste to all Lands, from the *Clime* to the *Chiliad*. Likewise 32 of these *Chains* in Length, at 32 Cubits to the *Chain*, make 1024 Cubits in Length, equal to the Side of the *Chiliad* gross Measure, the Square whereof is 1048576 Square Cubits, but the simple Measure of a Square *Chiliad* in Square Cubits 1000000, the Difference is 48576, which is after the Rate of 48,576 to the 1000, the full Allowance for Waste to all Lands from a Square *Chiliad* upwards. Now this gross Measure of a Square *Chiliad* is equal to 8 times the Square of an *English* Furlong, for 1048576 Square Cubits, equal to the Square of a *Chiliad* are also equal to 3484444,444, &c. Square *English* Feet, the 8th Part whereof in *English* Foot Measure is 435555,55, &c. whose Square Root is 659,966329, &c. equal to the Side of an *English* Furlong, equal to 40 Perches in Length, at 16,49915825 Feet to the Perch, which by our *English* Estimate is 16 Feet and a Half. This *Chain* of 32 Cubits is equal to the Side of the *Roman Clima* gross Measure, which is known to be equal to 60 *Roman* Feet in Length; for the Length of the Cubit in Inches is 21, 875, this multiply'd by 32 makes 700 Inches, equal to 60 *Roman* Feet at 11 $\frac{1}{3}$ Inches to the Foot. This agrees very well with that

that Foot on the Monument of *Statilius*, which in Inch Measure is estimated at 11, 664 Inches and Parts. Then the Square of this *Chain* being equal to the *Roman Clima* it will follow, that

8 Square Chains make 1 square *Roman Jugerum*.

16 Square Jugera make 1 square *English Furlong*.

8 Square *English Furlongs* make 1 square *Chiliad*.

8 Square *Chiliads* make 1 square *English Mile*.

In surveying Land by this Sort of Measure, the Computation is by *Ogdoads* instead of *Decades*, thus

8 Links in length make 1 Perch in length.

8 Perches in length make 1 Chain in length.

8 Chains in length make 1 Change in length.

8 Changes in length make 1 Ogdoad of Changes in length.

Where the Length of a Piece of Ground is to be multiply'd by its Breadth, the Work is in such Sort performed, that the Value of the Places in which each Figure stands, from

from the right Hand to the Left, shall successively exceed each other in Octupie Proportion, which is somewhat easier than the Decimal Way, by reason that we make Use of no Figure exceeding 7. For Example, let the Length of a Piece of Ground set down in Ogdoads be 75236, i. e. 7 Ogdoads, 5 Changes, 3 Chains, 2 Perches, and 6 Links, and let the Breadth be 6173 in the same Denominations as before; the Multiplication is performed in the same Manner as in common *Arithmetick*, excepting where by the vulgar Way for every 10 in the Product, I carry one to the next Place, here I carry one for every 8, and the Work will stand thus.

	7	5	3	2	6				
	6	1	7	4	3				
<hr/>									
	2	7	0	2	0	2			
	3	6	5	5	1	0			
	6	5	5	7	3	2			
	7	5	3	2	6				
	5	6	0	4	0	4			
<hr/>									
	5	7	7	3	3	2	6	5	0
									2
<hr/>									
K	I	H	G		F		E	D	C
B	A								
<hr/>									
8	7	7	5		11		2	6	5
									0
<hr/>									
									2

The

The whole Product consisting of 10 Places, I have marked them with 10 Letters. And to reduce this into the before named Denominations of Land-Measures, I halve all the Figures on the left Hand F, setting down the halves underneath, saying, half 5 is 2, which I set down under K, and carry one to I, which in that Place is 8, this added to 7 makes 15, half that is 7, which I set down under I, and carry one, &c. proceeding thus until I come to G, if in that Place I find an odd Number, one is to be carry'd to F, which in that Place makes 8, and is to be added to the Number over F, and the Sum set down under F in a little Column distant from the Numbers on both Sides. Likewise, all the Figures on the right Hand F, are to be brought down, so as to stand as in the Example above, whereby their Denominations whill be as follow.

Square

<i>Square Links</i>										
<i>Ogdoads of Square Links</i>										
<i>Square Perches</i>										
<i>Ogdoads of Square Perches</i>										
<i>Square Roman Climes</i>										
<i>Square Roman Fugera</i>										
<i>Square English Furlongs</i>										
<i>Square Chiliads</i>										
<i>Square English Miles</i>										
<i>Ogdoads of Square English Miles.</i>										
K	I	H	G	F	E	D	C	B	A	
2	7	7	5	11	2	6	5	0	2	

The *Rod* or *Reed* of 6 Cubits is the 64th Part of the great *Stade* gross Measure, which *Stade* is equal to 12 Chains in Length of 32 Cubits to the Chain. And 32 of these *Stades* in Length make the gross Measure of *Parasang*, whose simple Measure is 12000 Cubits. Then a Chain consisting of 8 of these *Rods* or *Reeds* being divided into 64 Links is very well suited to find the *Area* of Land in *Parasangs* and *Stades*, in the same Manner as its Content in *Chiliads* and *Climes* is found by the Chain of 32 Cubits ; for as the

the *Clime* to the *Chiliad*, so this *Stade* to the *Parasang*. By the *Arabian Canna* or *Pole* of 8 Cubits the *Area* of Land is found in short *Stades* gross Measure, the Computation is made after the Decimal Way, and the *Canna* is divided into 10 Links, each Link equal to the *Roman Foot* and a Half of that Foot on the Monument of *Statilius*, equal to one *Roman Cubit* equal to $\frac{1}{3}$ of the antient Cubit; 10 *Canna* make the antient *Schæne* or Chain. If I take the *Area* of a Piece of Ground in Square *Schænes* and Decimal Parts, the Reduction is made

Into *Stades* gross Measure in dividing the *Area* by 16,00.

Into *Arouræ* gross Measure in dividing the *Area* by 01,60.

Into *Climes* gross Measure in dividing the *Area* by 00,16.

The Side of *Clima* gross Measure being 700 Inches, the Side of the great *Stade* will be 700 *English Feet*, equal to 384 Cubits. If the *Area* of Land be taken in *English Feet*, it is reduced in Square *Stades*, in dividing by 490000. A Rod of 10 *English Feet* we find within the *Pyramid*, in the Height of a little Room, by Mr. *Greaves* called the second Anti-Closet. If Land be measured by a Rod of 7 *English Feet*, 10000 square Rods will

will make the Square of the great *Stade*; this Rod is found in the Length of the same little Room or Anti-Closet within the *Pyramid*. If Land be measur'd by a Rod of 100 Inches the *Area*

Divided by 49 gives the Content of the Land in *Climes* gross Measure.

Divided by 490 gives the Content of the Land in *Arouræ* gross Measure.

Divided by 4900 gives the Content of the Land in *Short Stades* gross Measure.

But the Number of Square *English* Perches and Square Chains (each Chain in Length equal to 4 Perches) contain'd in every one of these antient Measures, with full Allowance for Waste, are as follow; whereby it appears that the *English* Perch in Length is the 10th Part of the Side of the *Roman Jugerum*, and is very well suited to all these antient Measures. The Square of the great Mile I make to be equal to the 10th Part of the Square of *Parasang*, the simple Measure of whose Side is 12000 Cubits.

Square English Perches.	The antient Land Measures.	Square English Chains.
1843200	Parasang.	115200
1280000	Myriad.	80000
184320	Great Mile.	11520
128000	Short Mile.	8000
12800	Chiliad.	800
1800	Great Stad.	112,5
1250	Short Stad.	78,125
125	Aroura.	7,8125
100	Jugerum.	6,25
12,5	Clima.	,78125
102400	English Mile.	6400
1600	English Furlong	100
160	English Acre.	10
16	Chain.	1
1	English Perch.	,0625

Hereby it appears that the Allowance for Waste was the same I mentioned. The *Roman* Clime, the *English* Foot Measure, the Rod of 6 Cubits, the *Arabian* Canna, the Schene of 80 Cubits, the *English* Furlong and Perch, exactly agreeing with it. And that out of this, 4 in the 1000 was allowed for Meers, we have an Example in the Ground upon which this *Pyramid* stands, which is the Square of the great *Stade*, with Allowance only of 4 in the 1000 for that Purpose. This seems to be the Quantity of Land, which according to *Herodotus* (amongst the *Egyptians*) was allowed to each *Calassiry*, containing 12 *Arouræ*, for if I take a Chain equal to the Side of *Clima*, the Square of 10 of these Chains is equal to 10 *Arouræ*; therefore *Herodotus* being not over curious in such Matters, makes the Square of 12 Chains, equal to the Square of this *Stade*, to be also equal to 12 *Arouræ*; the Side of the lesser *Stade* (whose Square is equal to 10 *Arouræ*) being in Proportion to the Side of the greater *Stade* (whose Square is the Quantity of Land allowed to each *Calassiry*) as 10 to 12. Now upon the Banks of *Nile* there could be no Fences, by Reason that the Flood which comes once a Year would destroy them; but here was this Allowance for Meers, to the End that after the Flood was past, and each

Man's

Man's Lands measur'd out, there might be so much as the Breadth of a Furrow round each Plot, that a Meer might be driven either by marking it out with the Plough, or otherwise without diminishing the Lands. And the Side of the great *Stade*, with full Allowance for Waste, is 700 *English* Feet, equal to 100 Rods, at 7 Feet to the Rod. But the Square of this *Stade* simple Measure, is 144000 Square Cubits, to which add 4 in the 1000 for Meers, and the Sum will be 144576, whose Square Root in *English* Foot Measure is 693,133, which is 99,019 Perches, at 7 Feet to the Perch, and may well pass for 99 Perches equal to 693 Feet, equal to the Side of the *Pyramid's* Base, according to Mr. *Greaves's* Measure, from whence it seems that the antient Estimate of the Length of the Side of the great *Stade*, with Allowance of 4 in the 1000 for Meers, was 99 Perches, at 7 *English* Feet to the Perch. Not that this Allowance would be exactly such, but very near it. And we may suppose, that this Length of the Side of this great *Stade* was fixed upon as most proper for vulgar Use, because no other convenient Measure could be found out commensurable to this Perch, that would come so near as this which the Perch exactly measures. Likewise, if I make the Side of this *Stade* 99 $\frac{1}{2}$ such Perches, that will be much

about 10 in the 1000 added for Fences, besides the Allowance of 4 in the 1000 for Meers. To which Measure that Foot on the Monument of *Cossutius* is proportionable, for these 99 $\frac{1}{2}$ Perches are equal to 720 of these Feet on the Monument of *Cossutius*. Whereas the gross Measure of the Side of this *Stade*, with Allowance of 24 in the 1000 for Meers, Fences, and Free-boards, is equal to 100 of these Perches, equal to 700 English Feet, equal to 720 of those Feet on the Monument of *Statilius*; at which Rate the Length of the *Roman Foot* on the Monument of *Cossutius* will be in English Inch Measure 11,608 333, &c. for if only 14 in the 1000 be allowed for Meers and Fences, the Side of this *Stade* will be 99,51 Perches, which may well pass for 99 $\frac{1}{2}$, equal to 720 Feet at the Rate of 11,608 333, &c. English Inches to the Foot, which differs little or nothing from Mr. *Greaves*'s Estimate of the Length of that Foot on the Monument of *Cossutius*; wherefore as 1024 to 1014 so (or very near it) is the Square of that Foot on the Monument of *Statilius* to the Square of that Foot on the Monument of *Cossutius*. The first being proportioned to such Land Measures, where Allowance is made for Meers, Fences, and Free-bounds; the last to such Measures which belong to lesser Parcels, where Allowance is only made for Meers and

and Fences. We find in the *Bible* something that seems to allude to this Allowance of 10 in the 1000 for Fences, as *Revel.* 5th and 11th compared with *Daniel* the 7. and 10. The Plenitude of the Church at the Times there prophesied of, is expressed by adding *Chiliads* of *Chiliads* to *Myriads* of *Myriads*, i. e. a Square *Chiliad* to every Square *Myriad*, which is 10 to every 1000. But in the 14 of the *Revel.* the State of the Church at the Time there prophesied of, is expressed by 144000, being the Number of Square Cubits in the Square of the great *Stade* simple Measure. This last, the Inheritance of a mean private Person upon the Banks of *Nile*, whose Floods permit it not to be inclosed: The other a large Possession, like that of a mighty Prince, with a suitable Allowance for Fences; all Roads and High-ways excluded.

§. 9. The *English Hyde* I take to be the same with the antient *Chiliad* gross Measure, equal to 80 *English Acres*. Eight *Hydes* make a Square *English Mile*. Also a hundred *Hydes* are equal to a Square *Myriad*. The 4th Part of this *Hyde* or *Chiliad* equal to 20 *English Acres* is a Yard-land called *Virgata Terra*, because in open Fields its Parcels in Meadows are commonly measured with a *Pole*, *Rod*, or the like, as is usual in the Place where I live. Here

also the Parcels and Shares belonging to each *Hyde* are equal to that of 4 Yard-lands, and these *Hyde* Parts are usually severed and divided from each other with MeerStones, each containing 4 Yard-land Parts. But (excepting that these Pieces of Meadow Ground, and of such that is Lot-Grafs, or parting Grafs, are commonly called *Hydes*) the Name of *Hyde* is seldom used. In computing by the *Hyde* our Ancestors (it seems) had respect to its Value as well as Quantity, inasmuch as Lands in old Times were usually rated and assessed by the *Hyde* and Yard-land. Every *Hyde* as far as I can gather was valued at 4 l. *per Annum*. [Let this be better enquired into, for at the Writing hereof I had not the Opportunity to get sufficient Information about it.] And consequently a Yard-land or the 4th Part of a *Hyde* at 20 s. *per Annum*. Yet in some Places the *Hyde* seems to have been divided into more Yard-lands, as also into Parts, otherwise denominated according to the Custom of each Country. This Value of the *Hyde* seems to have been in the Times of the old *Saxons*, long before the Conquest, but afterwards when the Country grew more populous, and Lands came to be improved, when Trade began to encrease, and Coin became more plentiful, and when the Crown Piece, or Ounce of Silver, which at first was valued

valued at 20 d. was raised to 5 s. then Lands were also at a much higher Rate. But at the first, the *Hyde* as it respected the Quantity of a Piece of Land contained 80 Acres, equal to 12800 Square Perches at 16 $\frac{1}{2}$ to the Perch, which is equal to the antient *Chiliad* gross Measure; and as it respected the Quality of Land, it contained so much as was worth 4 l. *per Annum*, for which Reason there was allowed (from hence proceeds the Difference in our *English* Miles according to the vulgar Computation in each Country) sometimes 7 or 8 Yards to the Perch more or less according to the Goodness of the Land. But these *Hydes*, that by the antient Estimate were of equal Value, in after Ages became very unequal; not only for the different Improvements that have been made of Lands by Reason of Inclosures, and lying near great Towns or the like, but it seems that Lands were usually taxed by the *Hyde*, and for that Reason, in latter Times when Enquiry has been made into their Value, they have in many Places been given in at a less Number of *Hydes* than what they were at first rated at; as we may see at this Day, when Taxes are laid by the Pound Rent 'tis usual in many Places for Men to get their Lands valu'd at as low a Rate as they can. We may also find in the antient Records since the Conquest, that the

Hyde

Hyde in some Places has been valu'd at less than 4 l. *per Annum*, but this is not to be understood of the full Value, but of a small reserved Rent to the King, as Lord of the Manor. As to the Measure of the *Hyde* there has been much Inequality therein for other Reasons besides what have been mentioned. As Lands let out to Tenants by Lords of Mannors were often measured by a less *Pole* or *Perch* than those which they reserved to themselves. Yet notwithstanding the different Measures of the *Hyde*, and consequently of the *Acre* and *Perch*, which for divers Reasons have heretofore been used in *England*, our Statute Measures do very well agree with those of the greatest Antiquity. If therefore

§. 10. The old *Saxons* (as you have made it appear) were a free People from the Beginning, and scarce so much as felt the Power of the *Romans*, and have still preserved their most antient fundamental Laws; altho' since their coming into *Britain* they were overpowered by the *Danes*, and conquer'd by the *Normans*, it cannot seem improbable that they should also preserve their most antient Measures. If the *Egyptians*, that were successively subject to the *Persians*, *Greeks*, and *Romans*, and now for more than 1000 Years Slaves to *Mahometans*, have still preserved

served their *Cubit* and *Ardub*, very near the same with these antient Standards; if the old *Romans* (whose Beginnings were about the 7th *Olympiad*) had their *Ounce*, *Pound*, and *Congius* agreeing with them; if the *Attick Dram* and *Sextary* be found in this *Pyramid*, when the old *Greeks* are not able to give an Account from whence they had them, how much more likely is it that the old *Saxons*, a Nation as antient as any in the World, seated in *Germany*, when the Earth was first divided amongst the Sons of *Noah*; a free People, closely adhering to their antient Laws and Customs, should hand down to us their most antient Measures, the very Rules whereby all Mens Rights and Properties are set forth, distinguished and valued; the Alteration whereof might bring much Inconvenience, without any Prospect of Advantage. For such Reasons as these it may seem probable, that we have received from our prudent old Ancestors these very Measures, which they had carefully preserved from the Time they first became a Nation. But their near Agreement with these most accurate Standards, whereof 'tis impossible the old *Saxons* could have the least Knowledge, being of that remote Antiquity which seems to out-do all human Records of Time, fixed in a Place with whose Inhabitants they had no Commerce

merce or Acquaintance, expressed in such a Manner that was never rendred intelligible to these Parts of the World ; or for ought we know understood by the Natives themselves, is to me a powerful Argument that they were the very same which we, and all other Nations, at first receiv'd from *Noah* himself.

SIR, Your's, &c.



P O S T-

POSTSCRIPT.

WHEREAS in my Answer to your first Letter I supposed it very probable, that from this Palm (equal to the 6th Part of the antient Cubit, four of which Cubits make the Length of the exterior Superficies of this Tomb) all the most antient Measures were derived; how this holds good, not only in our *English* but in sundry other antient Measures, you have already seen, and may observe that 360 Cubick Palms make the antient *Core*, the simple Measure of which *Core* (equal to a *Cylinder* 38 Digits Diameter and 20 Digits deep) is also equal to the *English* Corn Quarter, or to 8 *Winchester* Bushels according to the Standard of Hen. 7th. in the *Exchequer*; which wants of the antient *Core* 15 in the 1000, for the Reasons I have given; also 7 Times 360 cubick Palms, equal to 7 antient *Cores*, make the great

great Beer Tun or double Tun, equal to 1260 cubick Palms, equal to the Number of Years contained in the great Lunar Period of the Antients, in which all their Lunar Embolisms and Intercalations made their Revolutions; and in the *Bible* is called *Time, Times and a Half*, because the Circle being divided into 360 Degrees, it follows that 3 Revolutions and a Half in the Motions of those Bodies, by which we measure Time at the Rate of 360 Degrees to a Revolution, made in all 1260 Degrees. Also 360 Wine Pints make *Ardub*, equal to the Cube of the antient Cubit, 7 of these are equal to 12 Wine Barrels, or half Hogsheads. But 12 of these Barrels make 7 Times 360 *Roman Sextaries*. Yet 'tis to be remembred that the *Roman Sextary* is to be filled to the Brim, and the antient Wine Measures within 10 Parts in 1000 of the Brim, at which Rate also a Wine Rundlet of 18 *English* Gallons is equal to 20 *Congii*, 8 of which Rundlets make the *Roman Culæus* equal to 144 *English* Wine Gallons. Here it may be fit to observe that the *Romans* had two *Amphoras*, one the 20th Part of *Culæus*, equal to 48 *Sextaries*, the other (estimated at 45 *Sextaries*) equal to the Cube of the Foot on the Monument of *Cossutius*; from hence *Modius*, the third Part of *Amphora*, or *Quadrantal*, was sometimes reckoned at 15, and sometimes

APPENDIX.

Being a short, but clear

INTERPRETATION

Of the most Antient

HIEROGLYPHICKS

Found in the

HOLY BIBLE.

ALL the Hieroglyphicks in the Bible may be compriz'd under these Five Heads, *viz.* 1. The third Heaven. 2. The lower Heaven. 3. The Earth. 4. The Sea. 5. Death, Hell, and the bottomless Pit. And the Things in them contain'd.

H 3 HEAD

HEAD I.

*Of the third Heaven, and the
Things therein contain'd.*

1. **B**Y the *third Heaven* in the *Apocalypse* we understand the happy State of the Saints here on Earth, who live the Life of Righteousness ; which Life results from the Union of God and the Soul, as the natural Life results from the Union of the Soul and the Body : Also metonymically, the third Heaven signifies, all the holy Saints on Earth.

2. By the *Temple of God* in Heaven, the Place of his Worship, is meant the true Worship of God in his holy Church. And by the Metonymy, it signifies all those that worship him in Spirit and Truth. And as this Temple is but one, so there ought to be an Unity in the Doctrine of the Church, and an Uniformity in the Worship of God. By the Temple is also understood every faithful and true *Christian*, in whom *Christ* dwells.

3. By *God's Throne* we may understand the Seat of his Divine Majesty, wheresoever he is truly worshipped ; either in the Congregation

gregation of the Faithful, or in the Heart of every true Believer.

4. By the *Rainbow* about the Throne we understand those holy Sacraments instituted by *Christ*, as generally necessary to Salvation; for as the *Rainbow* is a Token of the Covenant that God made with *Noah*, that the Earth should be no more destroy'd by a Deluge, so are the Sacraments in the Church duly and rightly administred, and worthily received, not only a Token of that Covenant, which God through *Christ* made with all Mankind, but a renewing and confirming the same to every faithful and true Christian in particular. Now the *Rainbow* being round about the Throne, shews, that in and through these Mysteries we make our Approach to the Throne of Grace.

5. By the *Lamb* is meant our Lord *Jesus Christ*. The *Lamb* signifies Truth and Innocency. The *Horns* of the *Lamb* signifies Power; and his *Eyes* Wisdom. By 7 *Horns* and 7 *Eyes* we understand Fulness of Power and Wisdom.

6. By the 7 *Lamps* before the Throne are meant the *Holy Ghost*, whose Gifts are manifold. Seven does not signify the precise Number of those Gifts, but the Plenitude of

of that Effusion which was in the Times of the Apostles.

7. By the *Sea of Glass* before the Throne is shew'd the Firmness, Liveliness, and Purity of that Faith, upon which they stand that approach this heavenly Throne. And by its Slipperiness a Caution is given to those that stand to take heed least they fall.

8. By the *Ark of the Testament* is meant the Word and Sacraments truly and rightly taught, and administred; for as the *Ark* was a Testimony of God's Presence in his holy Temple, so are the Word and Sacraments rightly taught and administred, a Testimony of his real Presence in his Publick Worship. And as none but Priests might bear the *Ark*, so none ought to administer the Word and Sacraments, but those that are called, as was *Aaron*.

9. By the *Four Beasts* in the midst of the Throne, and round about the Throne, are meant the Books of the Four *Evangelists*. By their *Eyes* are meant Wisdom and Knowledge.

10. By the *24 Elders* are meant the Books of the *Old Testament*; not (I suppose from the

the Number of the holy Penmen, but for that such Numbers as consists of *7ns*, *10ns*, and *12ves*, are often used in the *Old Testament* as the most perfect Numbers, which Numbers in the *Apocalypse* St. John also uses. Also, by a Metonymy, the *4 Beasts* and *24 Elders* may signify all such *Christians* who are excellent in the Knowledge and Practice of the Things in those Books contained.

11. By *Angels* are meant spiritual Powers; also, such Things that are Symbols, whereby such Powers are expressed are called *Angels*.

12. By the *Altar* is meant *God's Justice*.

13. By the *Horns of the Altar* is meant *God's Power*.

14. By the *Fire of the Altar* is meant *God's Wrath*.

15. By the *Angel with the golden Censer* is meant our *Lord Jesus Christ*, in and through whom alone the Church offers up her Prayers to God the Father; which, together with the Incense of his Mediation and Intercession, ascends up before the Throne of Grace.

HEAD II.

Of the lower Heavens, and the Things in them contained.

1. **B**Y the *lower and visible Heavens* is to be understood the outward and more visible State of the most pure Part of the *Catholick Church*.
2. The *Sun* is the Light and Heat of *Heaven*; by its Light we understand divine Knowledge, the Light and Knowledge of the *Gospel*. By its Heat we understand the Influences of that holy *Spirit*, which so warms our Affections that we become Doers of the *Word*, and put that Knowledge into Practice, so as to bring forth the *Fruits* thereof in our Lives and *Conversation*. By the *Sun* then is meant all *Spiritual Blessings*.
3. By the *Moon* is meant all *Worldly Blessings*; such as *Length of Days, Riches, and Honour*.
4. By the *Stars* are meant such *Men of Eminency*

Eminency which are Lights and Ornaments of the Church.

5. *Thunder* is the Voice of Heaven ; the Doctrine of the Church preach'd or written.

6. By the penetrating Nature of *Lightning* is set forth how quick and powerful the Word of God is, sharper than a two edged Sword.

7. By the Body of *Air*, and the various Dispositions thereof, is shewn the State of the Laity in the most pure Part of the Church.

8. By *Clouds* are meant such Nations and Kingdoms which are Parts of *Christ's* true visible *Church*.

9. By *Rains* and *Dews* are meant the Assistance of the divine Grace, whereby the Fruits of Faith are brought forth in our Lives and Conversations.

10. By *Hail*, *Whirlwind*, and *Tempest* are meant God's temporal Judgments on those that regard not his Word. *Exod.* 9. from 17 to 27.

11. By *Winds* are meant Heresy and false Doctrines, God's spiritual Judgments on those that regard not his Word.

12. By *Fowls* are meant those that have a temporal Power and Rule in the Church.

H E A D III.

*Of the Earth, and the Things
therein contained.*

1. **B**Y *Earth* is meant such Part of the Church which is full of gross Errors, and Corruptions. Sometimes by Earth is meant the Church of *Christ* before our Saviour's Coming in the Flesh, when the Truth was not yet fully reveal'd. Likewise, by Earth may be meant such Members of the visible Church, in whom is seen little or nothing either of the Knowledge or Practice of Religion.

2. By *Mountains* and *Islands* are meant such Nations and Kingdoms which are Parts of such a Church.

3. By

3. By *Cities* are meant Churches of great Eminency.

4. By a *Wildernes* is meant such Part of the Church which is least visible.

5. By *Grass* is meant the weaker Sort of *Christians*.

6. By *Corn*, *Grain*, and *Fruit* of the Earth are meant God's People fruitful in good Works.

7. By *Trees* are meant sound and strong *Christians*, which look upward far above the Earth, from whence they are sprung. Also that which from small Beginnings arises to be very great, is compared to a Tree.

8. By *Beasts* are meant those that have a temporal Power and Dominion in the Church, as the Beasts cover the Grass of the Field which they tread upon and devour.

9. By their *Horns*, are meant the Strength and Power of such Beasts.

I 10. By

10. By *Sheep* are meant the People of God in the midst of a crooked and perverse Generation.

11. By *Beasts of Prey* are meant such that make Havock and Destruction in the Flock.

12. By *Horses* we understand Warlike Power.

13. By *Locusts* are meant those that are sent by the just Judgments of God, to make Destruction in the Church, as the Locusts destroy the Grass of the Field, and Fruits of the Earth.

14. By *Earthquake* is meant Commotions in the Church about Matters of Religion.

15. Of Metals, *Gold* signifies that which is most desirable. *Silver*, that which is valuable and serviceable. *Brass* is less valuable, but more stubborn and obdurate. *Iron* most strong and invincible.

16. Of Colours, *White* signifies Purity.

Red, War and Bloodshed.

Black

Black, signifies Impurity.

A pale or lead Colour signifies Death.

Green signifies that which is pleasant and delightful. *Cant.* 1. 16.

17. *Weights and Measures* signify Justice.

By certain Numbers of known Measure is sometimes meant certain Particles of Time.

18. The Purity of the Holy Scriptures is express'd by *Fountains of Water*. Those Streams which flow from hence are compared to Rivers.

19. *Man* signifies such temporal Power by which the Church is protected. Our *Lord Jesus Christ* is the Son of Man.

20. By *Woman* is meant the Church. By a *Whore* or an *Adulteress* is meant a Church full of Corruptions.

21. By the *Sign* or *Likeness* of the Son of Man is meant the Power, Wisdom, and Truth of God's Word. His Head and Hairs, *Apocalypse* 1. 14. betoken the antient of Days; his *Flaming Eyes*, which pierce the Secrets of all Hearts, do shew his Infinite

rite Wisdom. His *Feet* are as firm as brazen Pillars to support his Church; and as terrible as consuming Fire to destroy his Enemies: His *Voice*, which is his Word in the Mouths of many Nations and *People*, is like the Sound of many Waters. His *Golden Girdle* signifies Truth in Perfection. With his two-edged Sword he enlarges the Bounds of his Empire, and destroys Enemies. His *Face* shining like the Sun in his Strength, shews that all Men shall see his Glory. By all which is set forth the Power, Wisdom, and Truth of him, whose Name (*Rev. 19. 14.*) is the Word of God.

22. *Fire* is that which consumes all combustible Matter; by *Fire* is therefore meant whatsoever consumes and destroys. God's Judgments upon Sinners is express'd by *Fire*; the like is also signified by a *Sword*. *Fire* is that which purifies Gold and other Metals, by *Fire* is therefore sometimes meant such Tryals which God sends upon his Children, which consumes the Dross, and purifies the Gold. *Fire* is beneficial to Man by its *Light*, and by its *Heat*; by *Light* is sometimes meant Wisdom and Knowledge, sometimes Virtue and Goodness. The Influencies of the Divine Spirit which inflames our Hearts with holy and good Desires is compared to *Heat*. The con-

contrary whereof is Coldness. *Rev. 3. 15.*
16. Fire may also signify such Gifts of the *Holy Ghost* which are as burning and shining Lights.

23. By *Darkness* is sometimes meant Ignorance and Folly. Sometimes Vice and Wickedness.

24. By *Smoak* is meant such Heresies and false Doctrines, by which the Truth is clouded and made obscure.

25. By *Sulphur* and *Brimstone* is meant such Damnable Doctrines which do wholly choak and destroy the Truth.

H E A D IV.

Of the Sea, and the Things therein contain'd.

1. **B**Y *Sea* is meant such Nations and Kingdoms which are out of the Pale of the visible Church.

2. By *Fishes* are meant those that have Power and Dominion therein.

3. By

3. By *Ships* are meant *Christian Congregations* amongst *Infidels*.

4. By many and great *Waters*, or *Floods*, are meant *Nations* and *People*.

HEAD V.

Of Death, Hell, and the bottomless Pit, and the Things therein contain'd.

1. **B**Y *Hell* or *ἀδην*, we understand what is Diametrically opposite to the Third Heaven; if therefore by the third Heaven is understood the happy Estate of the Saints here on Earth, who live the Life of Righteousness, which Life results from the Union of God and the Soul, as the natural Life results from the Union of the Soul and Body, then by *Hell* or *ἀδην* is meant the wretched State of those evil Men who are dead in Trespasses and Sins; which Death results from the Separation of God from the Soul, as the natural Death is the Result of the Separation of the Soul from

the

the Body. Also Metonymically by ~~dead~~ is understood all Men that are in such State and Condition. And in this Sense I suppose it is to be taken, *Rev. 20. 14.* where *Death* and *Hades* are said to be cast into the Lake of Fire.

By Hell may Sometimes be meant the State of those that are so far lost that they seem irrecoverable. As *Jonas* in the Whale's Belly, *Jonas 2. 2.* which was also a Sort of Death, as appears by the Parable of the Prodigal Son, *He was dead, and is alive, was lost, and is found.*

2. By the *Bottomless Pit* we understand a great Abyss of Darkness, *Gen. 1. 2.* That is an unmeasurable Depth of Folly, Vice, and Wickedness, which also may be called Hell.

3. The Everlasting State of the damned in the Lake of Fire, prepared for the Devil and his Angels, is in the *Apocalypse* call'd, ὁ θανάτος ὁ δεύτερος, the second Death, *Chap. 20. 14.*

4. By the *Dragon*, *Old Serpent*, and *Scorpion*, is meant the Devil; by Dragon is understood his Power; by Serpent his Cunning; by Scorpion his Malice; when he raises

raises Persecution against the Church he is called Dragon, when he by his Wiles draws Men into Sin, as he did our First Parents, he is called Serpent, when Men, apprehensive of the Guilt of Sin, are by him driven into Despair, he stings as a Scorpion.

As there are divers Sorts of Deaths, so there are divers Sorts of Resurrections, there being a Possibility of a Resurrection from all Sorts of Death, except the second Death.

F I N I S.









